

1896. Part of sheet 1

UK 17,666

GB-1896-07

See sheet 2

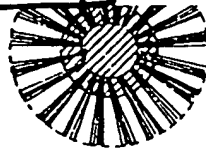
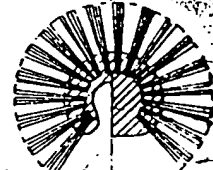


Fig. 4.



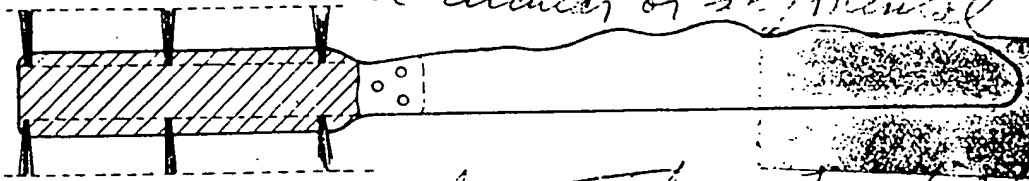
Fig. 5.



Brushes may be in longitudinal section concave or convex.

Fig. 6.

Brush can be circular or segmented



Brush may be rotated on its axis to clear the teeth Fig. 6a.

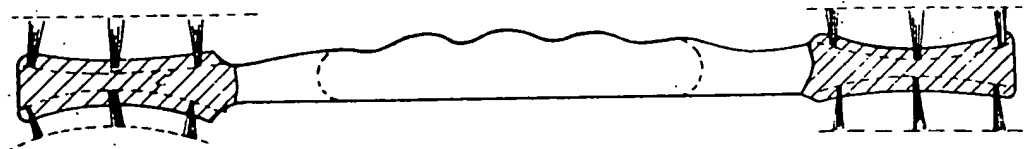
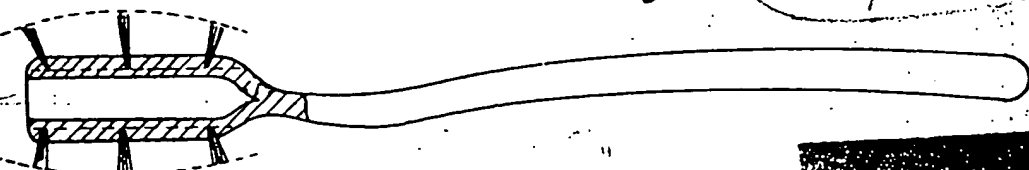


Fig. 7.

15/167.1



39 Tooth Brush

2 Shts. Part of SHEET 1.

Growth Brushes

Fig. 7a.

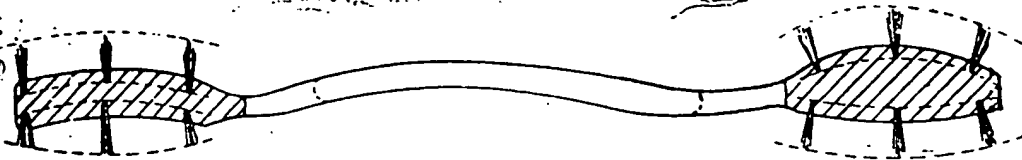


Fig. 8.

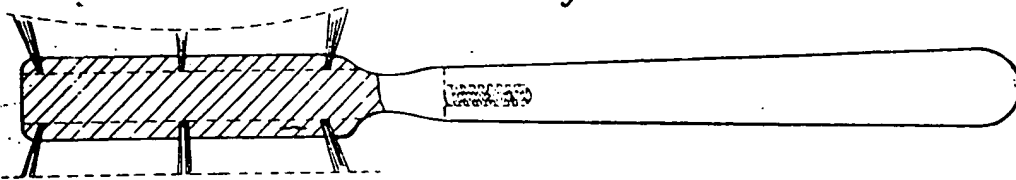


Fig. 8a

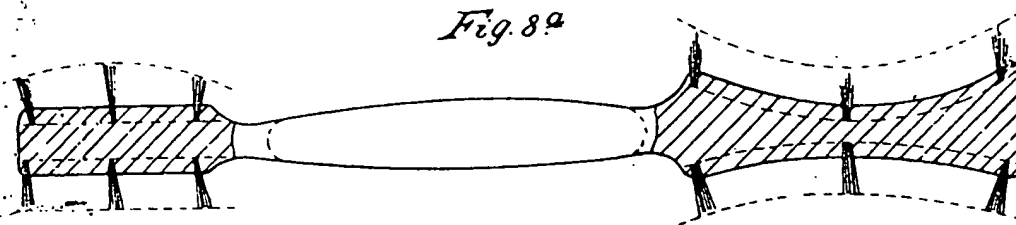


Fig. 9.

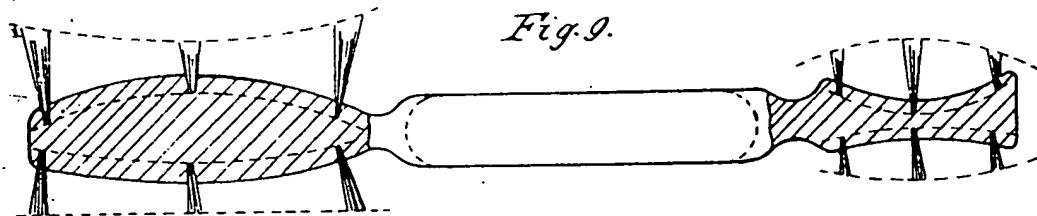


Fig. 10.

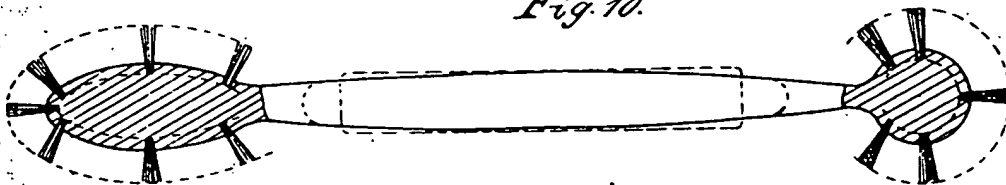
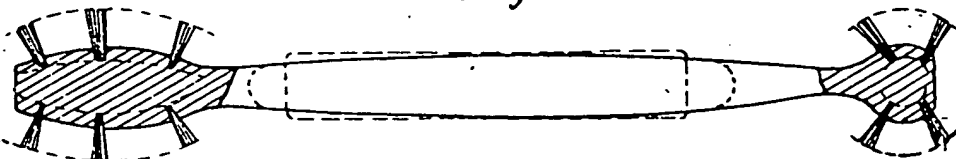


Fig. 11.



[This Drawing is a reproduction of the Original on a reduced scale]

Whitening

17,000  
1895

15  
167

A.D. 1895. SEP. 21. N<sup>o</sup>. 17,666.  
FLEMMING'S COMPLETE SPECIFICATION.

12 SHEETS.  
SHEET 2.

*Yrth Brushes*

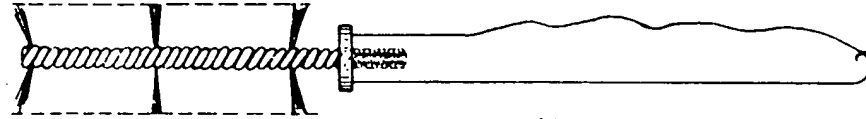
*Fig. 12.*



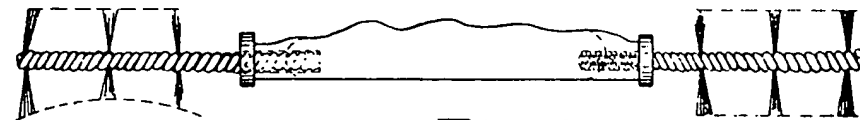
*Fig. 13.*



*Fig. 14.*



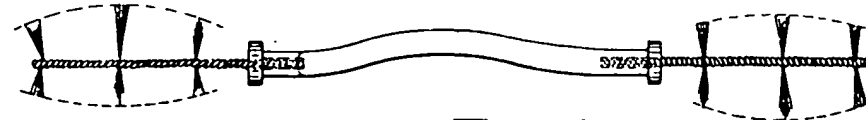
*Fig. 15.*



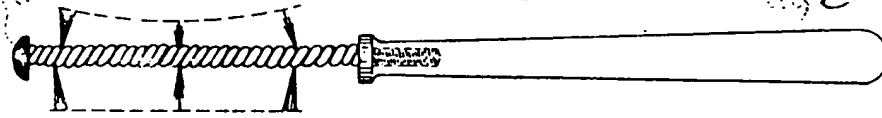
*Fig. 16.*



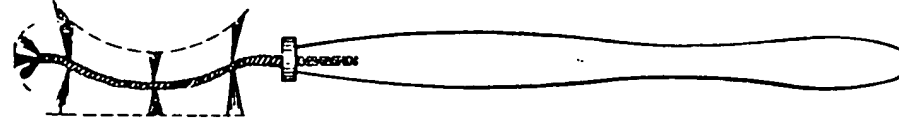
*Fig. 17.*



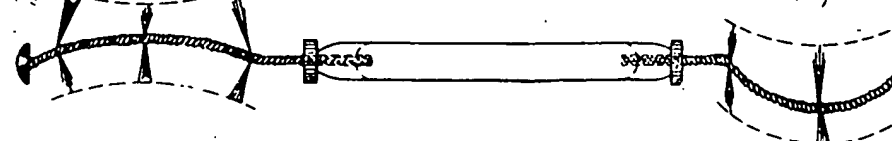
*Fig. 18.*



*Fig. 19.*



*Fig. 20.*



This Drawing is a reproduction of the Original on a reduced scale.  
 See Figs. 14 to 20 the handles are indicated by dashed lines.

N<sup>o</sup> 17,666



A.D. 1895

Date of Application, 21st Sept., 1895

Complete Specification Left, 22nd June, 1896—Accepted, 25th July, 1896

PROVISIONAL SPECIFICATION,  
Improvements in Tooth Brushes.

I, CARL EDUARD FLEMMING of Schönheide, in the Kingdom of Saxony and Empire of Germany, Brush Manufacturer, do hereby declare the nature of this invention to be as follows:—

The subject of the present invention is an improved device for cleaning teeth, comprising one or two brushes constructed in the shape of rotary bodies; the arrangement being such that it enables the teeth to be cleaned both externally and internally, and also, in the intermediate spaces or interstices between the teeth; which is a special feature of the invention, the cleaning movement of the actual device being performed in the vertical direction, while the hand of the user, which imparts such movement, moves circularly. The improved device is mainly intended to be used as above described, but it will be understood that it can be used backwards and forwards in an horizontal direction like an ordinary tooth brush.

In one form of the improved tooth brush, the brush proper, of cylindrical shape, is fitted on to another cylindrical brush body, which, unlike the first, is solid. The bundles of hairs are placed in a radial position converging towards the axis of the brush body and surrounding such body, or support, on all sides. The handle portion of the brush may be made of any desired shape such as cylindrical, ellipsoid, spherical, blunted ellipsoid, flattened spherical, or more or less concave or convex shape, being in all cases a rotary body.

In another form of brush the body or support is hollow. As in the first case, again, the sectional outline of the brush is circular. In the longitudinal direction the handle may be of any desired shape and may have a brush at each end.

According to another modification the brushes may be made in such a shape that their sectional areas, at right angles to their axes are in the shape of segments of a circle taken at varying angles as for example 60°, 90°, 120°, 180° and 270° or other suitable angle. And, accordingly, the brush bodies will vary in sectional outline, being either hollow or solid.

The brush bodies may be of any suitable shape in section, and in their longitudinal direction, their outline may be either cylindrical or more or less curved, either concave, convex, ellipsoid, spherical, blunted ellipsoid, flattened spherical, or of any other convenient shape. For example, one and the same brush support may have at one end, a surface, partly of great, and partly of little, concavity; and at the other end a surface, partly of great, and partly of little, convexity. The surfaces formed by the ends of the hairs, too, may be more or less curved, or in other words present a concavity or a convexity varying in extent, in the longitudinal direction, so as to fit the natural shape of the jaws. The complete brush may vary in length, being either as long as the usual brushes, or considerably shorter; in which latter case it may serve for cleaning the teeth inwardly.

Whatever the section or outline of the brush body may be, the bundles of hairs, no matter how thick or thin, or how their ends may be shaped or trimmed, may be arranged at any suitable distance apart. Also, such bundles, when placed in a transverse row, may be either of equal or of varying length or height; the resulting rubbing surface being, accordingly, either even or uneven, say, of zigzag

[Price 8d.]

*Flemming's Improvements in Tooth Brushes.*

shape. According as the brush body or support is of cylindrical, ellipsoid, ball-shaped, concave or convex outline, the surface made up of the ends of the hairs, or bundles of hairs, may also vary in shape in the longitudinal direction, and be either cylindrical, ellipsoid, spherical, blunted or flattened, or not (as the case may be), concave or convex. It is, however, possible for a cylindrical rubbing surface (made up of the ends of the hairs) to be formed even where the brush body is of convex shape, or of concave shape or a concave rubbing surface may be formed upon a support of convex shape, or a convex rubbing surface may be formed upon a concave brush body; or again, a cylindrical brush body may support a concave or convex brush; or in fact a brush or combination of hairs or bundles of hairs forming in the aggregate a complete or a partial rotary body may be combined with a brush body or support of any suitable shape or outline.

Such bodies or supports of brushes may be fixed either to one end only or to both ends of a suitable handle; and the same handle may carry one or more brushes of the same shape or outline, or, say, two brushes of different shapes. Thus, for example, a brush intended for cleaning the teeth internally may be fixed to the same handle to which a brush for cleaning the teeth externally is secured.

In another form of brush bundles of hairs are fixed in supports, consisting of two or more strands of wire twisted together. Brushes thus formed are attached to or in suitable handles or supports by being either screwed, cemented or otherwise securely fitting within their sockets. These brushes also may be made in the forms above described viz.: in the shape of revolvable bodies. Brushes with these wire bodies or supports may present, in cross section, either the outline of a complete circle, or that of a segment cut at a smaller or larger angle. The ends of such brushes may be fitted either with bundles of trimmed hairs, or with a small sponge; or with indiarubber, so as to fit them for cleaning or otherwise treating, for surgical or other purposes, various parts of the buccal cavity or the jaws. The brush body may be rectilinear, or curved in any convenient manner so as to fit the outline of the jaw or set of teeth.

The handles of the brushes may be of circular, elliptical, square, rectangular or octagonal section, or they may be of any other suitable shape; and in the longitudinal direction they may be of undulating outline on one side so as to secure a firm grip of the hand and to facilitate the desired rotary motion of the hand in operating the brush, by giving it better control over the brush. The handle moreover, may either be straight or be made to accommodate the shape of the mouth, according as it is desired to clean the teeth from within or without, being in that case more or less curved in outline. The handle and brush body may consist of a number of different parts. It will be understood that other methods of attachment may be adopted if preferred.

This improved tooth brush enables the surfaces of teeth as well as the interstices between adjacent teeth to be thoroughly cleaned by a vertical movement which is produced by moving the hand circularly, so that the brush itself is not moved up and down in a vertical direction. The shapes of the handles of these tooth brushes should be such as to enable the hand of the user to grasp them firmly and securely, without any inconvenience to the user himself, and so that he may readily move his hand backwards and forwards as required.

The rounded surfaces of the brushes, formed by a combination of bundles of hairs, are as it were rolled over the surfaces of the teeth to be cleaned; the cleaning thus achieved is therefore thorough and effective, while the spaces between the teeth may at the same time, by an accompanying movement in the vertical direction be conveniently cleaned.

The handle and the brush body or support should preferably or advantageously be made of wood, celluloid, bone, hard rubber or the like.

Dated this 21st day of September 1895.

HASELTINE, LAKE & Co.,  
45 Southampton Buildings, London, W.C., Agents for the Applicant.

## COMPLETE SPECIFICATION.

## Improvements in Tooth Brushes.

I, CARL EDUARD FLEMING, of Schönheide, in the Kingdom of Saxony, and Empire of Germany, Brush Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

- 5 The subject of the present invention is an improved device for cleaning teeth, comprising one or two brushes, having a circular or partial circular outline in transverse section the arrangement being such that it enables the teeth to be cleaned both externally and internally, and also, as a special feature, in the interstices between the teeth, the cleaning movement of the device in the latter
- 10 case being performed in the vertical direction, while the hand of the user, which imparts such movement, moves circularly. The improved device is mainly intended to be used as above described but it will be understood that it can be used by moving it backwards and forwards in a horizontal direction like an ordinary tooth-brush.

- 15 The invention will be best understood by reference to the accompanying drawings, in which several forms of the novel tooth-cleaning device are, by way of example, delineated.

Figures 1 to 5 are cross sections of tooth brushes the outlines of which are circles or segments of circles.

- 20 Figures 6 to 9 show single and double tooth brushes, the body of the brush, in the several cases, being of cylindrical shape, either solid or hollow, or of concave or convex outline and having a plane, concave or convex rubbing surface;

- Figures 10 and 11 are double tooth-brushes having ellipsoidal and spherical brushes with blunt or rounded ends and conveniently shaped rubbing surfaces;

Figures 12 and 13 are sections at right angles to the axes, of the tooth brushes represented in Figures 14 to 20 and having brush bodies formed of wire.

Figures 14 to 18 represent single and double tooth brushes having either plain, concave or convex rubbing surfaces; and

- 30 Figures 19 and 20 are brushes the bodies of which are made of wire, and which present a more or less curved outline.

- In the tooth brush shown in Figure 1, the brush proper, of cylindrical shape, is fitted on to another cylindrical brush body, which, unlike the first, is solid. The bundles of hairs are placed radially converging towards the axis of the brush body
- 35 and surrounding such body, or support, on all sides. The handle portion of the brush may be made of any desired shape such as cylindrical ellipsoidal spherical, blunted ellipsoidal, flattened spherical, or more or less concave or convex that is to say, being in all cases a rotary body.

- The brush represented in Figure 2 possesses a hollow body or support. As in
- 40 the first case, such support is completely surrounded with radial bundles of hairs, so that, here again, the sectional outline of the brush is circular. In the longitudinal direction the handle may be of any desired shape and may have a brush at each end.

- Figures 3 to 5 represent brushes made in such a shape that their sections, at
- 45 right angles to their axes are segments of circles having their terminal radii at varying angles as for example 60°, 90°, 120°, 180° and 270° or other suitable angle. And, accordingly, the brush bodies will vary in sectional outline, being either hollow or solid, as indicated at the right and left sides of the said figures, respectively.

- 50 The brush bodies may be of any suitable shape in section, and in their longitudinal direction, their outline may be either cylindrical or more or less

*Flemming's Improvements in Tooth Brushes.*

curved, either concave, convex, ellipsoidal, spherical, blunted ellipsoidal, flattened spherical, or of any other convenient shape. In Figure 9, for example, one and the same brush support presents at one end, a surface, partly of great, and partly of little, concavity; and at the other end a surface, partly of great, and partly of little, convexity. In Figure 6<sup>A</sup> a form of brush support is shown, the convexity of which similarly varies in magnitude. The surfaces formed by the ends of the hairs, too, may be more or less curved, or in other words present a concavity or a convexity varying in extent, in the longitudinal direction, so as to fit the natural shape of the jaws, as illustrated in Figures 6<sup>A</sup> to 11; it being immaterial which of the sectional outlines shown in Figures 1 to 5 is employed at the same time. The complete brush may vary in length, being either as long as the usual brushes, or considerably shorter in which latter case it may serve for cleaning the back surfaces of the teeth.

Whatever the section or outline of the brush body may be, the bundles of hairs, no matter how thick or thin, or how their ends may be shaped or trimmed, may be arranged at any suitable distance apart. Also, such bundles, when placed in a transverse row, may be either of equal or of varying length or height; the resulting rubbing surface being, accordingly, either even or uneven, say, of zigzag shape. According as the brush body or support is of cylindrical, ellipsoidal, ball-shaped, or has a concave or convex outline, the surface made up of the ends of the hairs, or bundles of hairs, may also vary in shape in the longitudinal direction, and be either cylindrical, ellipsoidal, spherical, blunted or flattened, or not (as the case may be), concave or convex. Brushes of this class wherein the trimming of the hairs correspond to the outline to the shape of the brush support, either wholly or partly, are shown in Figures 6, 6<sup>A</sup>, 7<sup>A</sup>, 8, 8<sup>A</sup>, 10 and 11 of the drawings. It is, however, possible for a cylindrical rubbing surface (made up of the ends of the hairs) to be formed even where the brush body is of concave shape (as shown in Figures 6<sup>A</sup> on the right), or of convex shape (see Figure 9 on the left, below); or a convex rubbing surface may be formed upon a support of concave shape (Figure 7<sup>A</sup> on the left, below); or a concave rubbing surface may be formed upon a convex brush body (Figure 9 on the left, at top); or again, a cylindrical brush body may support a convex or concave brush (Figures 7 and 8, on the left, at top); or in fact a brush or combination of hairs or bundles of hairs having in the aggregate an outline which in transverse section is circular or segmental may be combined with a brush body or support of any suitable shape or outline.

Such bodies or supports of brushes may be fixed either to one end only or to both ends of a suitable handle; and the same handle may carry one or more brushes of the same shape or outline, or, say, two brushes of different shapes, as exemplified in Figures 6<sup>A</sup>, 7<sup>A</sup>, 8<sup>A</sup>, 9, 10, 11. Thus, for example, a brush intended for cleaning the teeth internally may be fixed to the same handle to which a brush for cleaning the teeth externally is secured, as represented in several different forms in Figures 8<sup>A</sup> and 9.

In Figures 14 to 20 bundles of hairs, are fixed in supports, consisting of two or more strands of wire twisted together. Brushes thus formed are attached to or in suitable handles or supports by being either screwed, cemented or otherwise securely fitted within their sockets. These brushes also may be made in the forms above described and illustrated in Figures 6 to 9, as is further shown in Figures 14 to 20. Brushes with these wire bodies or supports may present, in cross section, either the outline of a complete circle, or that of a segment having a small or large angle. The ends of such brushes may be fitted either with bundles of trimmed hairs, as in Figures 15 and 19, or with a small sponge, as shown in Figures 17 and 20 on the right; or with indiarubber, as shown in Figures 18 and 20 on the left; so as to fit them for cleaning or otherwise treating, for surgical or other purposes, various parts of the buccal cavity or the jaws. The brush body may be rectilinear, as shown in Figures 14 to 18, or, as represented in Figures 19 and 20, or curved in any convenient manner so as to fit the outline of the jaw or set of teeth.

*Flemming's Improvements in Tooth Brushes.*

5 The handles of the brushes may be of circular elliptical, square, rectangular or octagonal section, or they may be of any other suitable shape; and in the longitudinal direction they may be of undulating outline on one side so as to secure a firm grip of the hand and to facilitate the desired rotary motion of the hand in operating the brush, by affording better control over the brush. The handle, moreover may be straight or it may be made to accommodate the shape of the mouth, according as it is desired to clean the teeth on the inner or outer surfaces, being in that case more or less curved in outline. The dotted lines of Figures 6<sup>A</sup>, 7<sup>A</sup>, 8<sup>A</sup>, 9, 10, 11, 15, 17 and 20, showing double brushes, illustrate those cases where one brush only is for the time being attached to the handle,—say on the right or on the left only. The handle and brush body may consist of a number of different parts, as shown in Figures 6 and 8. It will be understood that other methods of attachment may be adopted if preferred.

15 This improved tooth brush enables the surfaces of teeth as well as the interstices between adjacent teeth to be thoroughly cleaned by a vertical movement which is produced by moving the hand circularly, so that the brush itself is not moved up and down in a vertical direction. The shapes of the handles of these tooth brushes should be such as to enable the hand of the user to grasp them firmly and securely, without any inconvenience to the user himself, and so that he may readily move his hand backwards and forwards as required.

20 The rounded surfaces of the brushes, formed by a combination of bundles of hairs, are as it were rolled over the surfaces of the teeth to be cleaned; the cleaning thus achieved is therefore thorough and effective, while the space between the teeth may at the same time, by an accompanying movement in the vertical direction be conveniently cleaned.

25 The handle and the brush body or support may be advantageously made of wood, celluloid, bone, hard rubber or the like.

30 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

A tooth brush (or teeth cleaning device) comprising one or two brushes which have a circular or segmental outline in transverse section, while in the longitudinal direction they may be of any suitable shape, it being possible to make the shape of the brush support and that of the brushing or rubbing surface either correspond or differ as the case may be, for the purpose of enabling the teeth and the spaces or interstices between the teeth to be cleaned in the vertical direction by a circular movement performed by the hand holding the brush, while at the same time permitting, if necessary, the teeth to be effectually cleaned by the usual horizontal movement of the brush, substantially as described and shown.

40 Dated this 22nd day of June 1896.  
HASELTINE, LAKE & Co.,  
45 Southampton Buildings, London, W.C., Agents for the Applicant.

London: Printed for Her Majesty's Stationery Office, by Darling & Son, Ltd.—1896